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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/960,296 | 09/24/2001 | Kenji Maruyama | 011267 | 4754 |

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| EXAMINER | |
|---|---|
| SCHILLINGER, LAURA M | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2813 | |

DATE MAILED: 11/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/960,296 | MARUYAMA ET AL. | |
| | Examiner | Art Unit | |
| | Laura M Schillinger | 2813 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *23 August 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) *17-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16 and 20-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/23/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-16, 20-22 are rejected under 35 U.S.C. 102(a) as being anticipated by Nabatame et al ('248).

In reference to claim 1, Nabatame teaches a device comprising:

A first electrode of a metal, a ferroelectric film containing Ti formed over the first electrode, and a second electrode of a metal formed over the ferroelectric film (Col.3, lines: 10-15), both the first electrode and second electrode being an electrode of a base metal (Col.3, lines: 55-60), the semiconductor device further comprising

a first intermediate layer of perovskite crystal formed between the first electrode and the ferroelectric film (Col.3, lines: 35-40) , materials of the first intermediate layer (Compare Col.3-4, lines: 64-3 to) being different from materials of the first electrode (Col.3, lines: 56-58 ), and the ferroelectric film (Col.3, lines: 18-28), the intermediate layer containing Ti (Col.3-4, lines: 64-3- $LaTiO_3$ or $SrTiO_3$), (See also Fig.7) and

a second intermediate layer of perovskite crystal structure formed between the ferroelectric film and the second electrode (Col.3, lines: 41-46), materials of the second

intermediate layer (Compare Col.3-4, lines: 64-3 to) being different from materials of the ferroelectric film(Col.3, lines: 18-28) and the second electrode (Col.3, lines: 56-58) , the second intermediate layer containing Ti (Col.3-4, lines: 64-3- $LaTiO_3$ or $SrTiO_3$), (See also Fig.8 (a)).

[NOTE: Applicant has cited his specification as containing a definition of the term "base metal" as metals which are not noble- the Examiner has reviewed the periodic table and determined that the noble metals are Au, Ag, Pt and Pd, therefore a base metal as defined by the Applicant are metals which are not Au, Ag, Pt and Pd]

In reference to claim 2, Nabatame teaches wherein the intermediate layer is : SrTiO(3) (Col.3-4, lines: 64-3).

In reference to claim 3, Nabatame teaches wherein the intermediate layer further comprises: Sr (Col.3-4, lines: 64-3)

In reference to claim 7, Nabatame teaches wherein the metal is Ni (Col.3, lines: 55-60).

In reference to claim 8, Nabatame teaches wherein the metal is Ni (Col.3, lines: 55-60).

In reference to claim 9, Nabatame teaches wherein the metal is Ni (Col.3, lines: 55-60).

In reference to claim 10, Nabatame teaches wherein the ferroelectric material is Pb based (Col.3, lines: 17-25).

In reference to claim 11, Nabatame teaches wherein the ferroelectric material is PZT (Col.3, lines: 17-25).

In reference to claim 12, Nabatame teaches wherein the PZT film further contains Ca (Col.3, line: 25).

In reference to claim 13, Nabatame teaches wherein the ferroelectric material is $(AO)_2$ $(B_{Y-1}C_YO_{3Y+1})$ wherein A is Bi and B is Ca and Y is 2,3,4,5 (Col.3, lines: 20-25 and Col.6, lines: 15-20).

In reference to claim 14, Nabatame teaches wherein the ferroelectric has Bi (Col.3, lines: 20-25 and Col.7, line: 10).

In reference to claim 15, Nabatame teaches wherein the ferroelectric has $Bi_2Ca_3Ti_4O_{15}$ (Col.3, lines: 20-28).

In reference to claim 16, Nabatame teaches a device comprising:

A first electrode of a metal, a ferroelectric film containing Ti formed over the first electrode, and a second electrode of a metal formed over the ferroelectric film (Col.3, lines: 10-

15), both the first electrode and second electrode being an electrode of a base metal (Col.3, lines: 55-60), and a transistor electrically connected to the first electrode or second electrode (Col.5, lines: 7-11) the semiconductor device further comprising

a first intermediate layer of perovskite crystal formed between the first electrode and the ferroelectric film (Col.3, lines: 35-40) , materials of the first intermediate layer (Compare Col.3-4, lines: 64-3 to) being different from materials of the first electrode (Col.3, lines: 56-58 ), and the ferroelectric film (Col.3, lines: 18-28), the intermediate layer containing Ti (Col.3-4, lines: 64-3- $LaTiO_3$ or $SrTiO_3$), (See also Fig.7) and

a second intermediate layer of perovskite crystal structure formed between the ferroelectric film and the second electrode (Col.3, lines: 41-46), materials of the second intermediate layer (Compare Col.3-4, lines: 64-3 to) being different from materials of the ferroelectric film(Col.3, lines: 18-28) and the second electrode (Col.3, lines: 56-58) , the second intermediate layer containing Ti (Col.3-4, lines: 64-3- $LaTiO_3$ or $SrTiO_3$), (See also Fig.8 (a)).

In reference to claim 20, Nabatame teaches a device comprising:

A first electrode of a base metal (Col.3, lines: 55-60), a ferroelectric film formed over the first electrode, and a second electrode of a noble metal(Col.3, lines: 55-60- noble metals are Au, Ag, Pt, and Pd) formed over the ferroelectric film (Col.3, lines: 10-15), the semiconductor device further comprising:

An intermediate layer of perovskite crystal structure formed between the first electrode and the ferroelectric film (Col.3, lines: 35-40), materials of the intermediate layer being different

from the materials of the first electrode and the ferroelectric film(Compare Col.3-4, lines: 64-3 to Col.3, lines: 18-28).

In reference to claim 21, Nabatame teaches a semiconductor device comprising:

A first electrode of a noble metal (Col.3, lines: 55-60- noble metals are Au, Ag, Pt, and Pd), a ferroelectric film formed over the first electrode, and a second electrode of a base metal (Col.3, lines: 55-60), formed over the ferroelectric film(Col.3, lines: 10-15), the semiconductor device further comprising:

An intermediate layer of perovskite crystal structure formed between the ferroelectric film and the second electrode (Col.3, lines: 41-46), materials of the intermediate layer being different from the materials of the ferroelectric film and a second anode (Compare Col.3-4, lines: 64-3 to Col.3, lines: 18-28).

In reference to claim 22, Nabatame teaches a semiconductor device comprising:

A capacitor including a first electrode of a base metal (Col.3, lines: 55-60), a ferroelectric film formed over the first electrode, and a second electrode of a noble metal(Col.3, lines: 55-60- noble metals are Au, Ag, Pt, and Pd) formed over the ferroelectric film(Col.3, lines: 10-15); and

A transistor electrically connected to the first electrode or the second electrode, the semiconductor device (Col.5, lines: 7-11) further comprising:

An intermediate layer of perovskite crystal structure formed between the first electrode and the ferroelectric film(Col.3, lines: 35-40), materials of the intermediate layer being different

from materials of the first electrode and the ferroelectric film(Compare Col.3-4, lines: 64-3 to Col.3, lines: 18-28).

***Response to Arguments***

Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

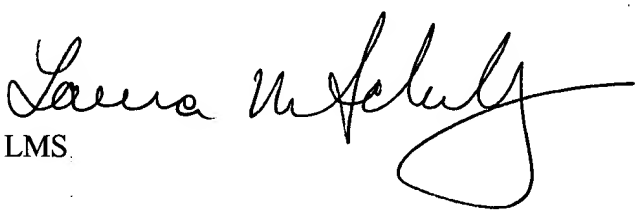
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M Schillinger whose telephone number is (571) 272-1697. The examiner can normally be reached on M-T, R-F 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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